The Number of CCe Events

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Confusion

- I sent Tomoko a list of "events with electrons" last year
  - Not necessarily CCe events
  - Not sure if this is the source of the Nagoya list of CCe events
- Discovered a mistake in my definition of CCe events in events.lis
  - Usual definition: event with electron E > 20 GeV → CCe
  - But events.lis defines events with electron E > 10 GeV→ CCe

Events w electrons vs CCe events

- MC truth electrons in NC events
  - 15% have an electron
  - 1% have an electron w E > 10 GeV
  - 0.4% have an electron w E>20 GeV

Determine number of CCe events

- Process 10k MC events in all periods + all Phase 1 & 2 events (552) in the same job
  - Ignore events with muons
    - Remaining events are CCe, NC, CCtau and CCmu that failed the MID tag
  - Classify events as "Reconstructed CCe" by requiring at least one track with EM E > E_{cut}
    - otherwise "Reconstructed not CCe"
  - Use MC event type to determine the CCe efficiency and "not CCe" background
  - Ignore the event classification in events.lis

Results

$$\text{Corr CCe Data Evts} = \frac{\text{“CCe Data Evts” } *(1-\text{”Not CCe Bg”})}{\text{“CCe Effic”}}$$

$$\text{FOM} = \text{Figure of Merit} = \frac{\text{sqrt(“CCe Data Evts”)*”CCe Effic”}}{\text{“Not CCe Bg”}}$$

E Cut (GeV)	Cce Data Events	Not CCe Data Events	Cce Effic	Not CCe Bg	Corr Cce Data Evts	FOM	
15	137	204	68.5%	23.1%	154	34.7	
18	127	214	62.8%	18.1%	166	39.1	
20	113	228	56.1%	16.4%	168	36.4	
25	97	244	50.8%	14.6%	163	34.3	
30	85	256	44.9%	12.9%	165	32.1	
				Average=	163	Std Dev=	6